HFH patients (8 Grade II, 5 Grade III) vs 3/34 (8.8%) of the controls (3 Grade II), (p = 0.004). When the patients were divided according to age (<40 years and >40 years) and compared to age and sex matched controls no difference was detected in the younger ones (7.1% vs 5.9%, p = NS), while in the elderly groups, HFH patients had more severe TAA (60% vs 11.8%, p = 0.003). It is concluded that patients with HFH commonly suffer from progressive atherosclerosis, even in the absense of manifest coronary angiopathy. This can easily be detected and followed-up by TEE.

754 Atrial Fibrillation — II

Tuesday, March 21, 1995, 2:00 p.m.–3:30 p.m.
Ernest N. Morial Convention Center, Room 24

2:00

754-1 Biatrial Synchronous Pacing: A New Therapeutic Approach to Prevent Refractory Atrial Tachyarrhythmias

Claude Daubert, Daniel Gras, Christophe Leclercq, J. Michel Baïsset, Frédéric Victor, Philippe Mabo. *University Hospital, Rennes, France*

To test the hypothesis that biatrial synchronous pacing (BASP) may prevent atrial tachyarrhythmia (AT) recurrences in selected cases, we prospectively implanted permanent pacemakers providing BASP in 20 consecutive patients. Inclusion criteria were the association of (1) multiple (≥3) recurrences of permanent AT without any efficacy of drug therapy (mean = 3.5 drugs/pt). Atrial fibrillation in 12 Pts; atypical Atrial Flutter involving the left atrium in the reentry circuit in 12 pts; common Atrial Flutter in 3 pts; and Atrial Tachycardia in 4 Pts (2) major intra- and interatrial conduction block with a mean interatrial conduction time of 150 ± 40 ms during spontaneous sinus rhythm (SSR). The pacing system consisted of two atrial leads, one placed in the high right atrium and the other one into the coronary sinus to sense and pace the left atrium, both connected via a Y bifurcated connector at the atrial port of a SSI pacemaker programmed in the AAT or AATR mode (bipolar pacing and sensing configuration) in 5 pts with normal AV conduction, or of a DDD pacemaker with a special program of "atrial resynchronization" loaded into the RAM memory in 15 pts. In all pts, BASP provided permanent atrial resynchronization as well during atrial pacing, as during SSR and after atrial extrasystoles. During permanent A pacing the mean P wave duration decreased from 209 ± 38 ms without BASP to 108 ± 13 ms with BASP (p < 0.001). After a mean follow-up of 18 months (range: 3–66), 12 pts (60%) remained totally free from AT recurrences. 4 pts had short episodes of AT which resolved spontaneously. Only 4 pts (20 %) returned to permanent AT. There was no significant difference according to the type of AT.

These preliminary results suggest a potential role for BASP to prevent recurrences of drug refractory AT in selected pts with intra- and interatrial conduction block.

2:15

754-2 Dual Site Atrial Pacing for the Acute and Chronic Prevention of Atrial Fibrillation: A Prospective Study

Atul Prakash, Sanjeev Saksena, Michael Hill, Julie Berg, Maria Diaz, Ryszard B. Krol, Philip Mathew, Irakli Giorgberidze, Nadeem Haque, Rahul Mehra. *Eastern Heart Inst, Passaic & NJ Med School, Newark, NJ*

We evaluated the feasibility of dual site atrial pacing (DAP) at the high RA & coronary sinus os & its efficacy in the immediate & chronic prevention of atrial fibrillation (AF) using a prospective crossover study design. 13 patients (pts) with drug refractory paroxysmal or chronic AF, mean age 68 ± 15 yrs, mean LV ejection fraction 49 ± 17%, mean LA diameter 37 ± 7 mm with >2 documented episodes in prior 6 mos, were considered for DAP. AF was induced using 1, 2 or 3 extrastimuli at 2 to 4 RA sites & DAP was tested acutely for prevention of induced AF. Chronic DAP was instituted using 2 atrial leads & 1 ventricular lead in the DDDR mode. DAP was switched to single site atrial pacing after 3 mos while remaining in the DDDR mode. Endpoint for failure with either pacing mode was recurrent AF needing new antiarrhythmic drugs or D.C. cardioversion. *Results:* 11 pts had DAP tested acutely. Mean P wave duration was 120 ± 33 ms & PA interval was 49 ± 22 ms. The effective refractory period at the coronary sinus os was 225 ± 17 ms & at the high RA was 238 ± 22 ms (p > 0.2). Acutely, DAP prevented AF in 4 of 11 pts. 8 pts had permanent pacemakers implanted to institute chronic DAP. In 4 pts, DAP had been effective acutely in suppression of inducible AF whereas it was ineffective in 2 pts & was not tested in 2 pts. Atrial pacing threshold at the high RA was 0.9 ± 0.2V, at the coronary sinus os was 1.4 ± 0.2V, & with DAP was 1.5 ± 0.5V (p = 0.01 vs high RA). P wave amplitude at the coronary sinus os was 2.15 ± 0.85 mV, at the high RA was 2.75 ± 1.1V, & with DAP was 2.52 ± 1V. During followup of 3 to 180 (mean 92) days, all 8 pts during DAP remained in sinus rhythm despite a decrease in antiarrhythmic drug use (mean 2.1 ± 1 before DAP vs 0.4 ± 0.5 after DAP, p < 0.001). 5 pts did not require any antiarrhythmic therapy & the remaining 3 were maintained on 1 previously ineffective drug. In 1 of 4 pts switched to single site atrial pacing, sustained AF recurred requiring cardioversion. *Conclusions:* (1) DAP is feasible & can be evaluated acutely at electrophysiologic study or chronically using currently available DDDR pacemakers. (2) Acutely, DAP can suppress inducible AF in selected pts. (3) Chronically, DAP can prevent AF recurrences during intermediate term followup.

2:30

754-3 Impact of Atrial Fibrillation on the Risk of Death: The Framingham Study

Emelia J. Benjamin, Daniel Levy, Ralph B. D'Agostino, Albert J. Belanger, Philip A. Wolf. *Framingham Study, Framingham, MA*

Although atrial fibrillation (AF) is known to cause substantial morbidity, it remains unclear to what extent AF promotes mortality, independent of other associated risk factors (RF) for death. *Methods:* We examined the contribution of AF to mortality in the population-based Framingham Study. Stratified Cox proportional hazards models, with approximately 2 controls per case, matched on age and sex, were examined with up to 38 years of follow-up. Subjects were eligible if they were between the ages of 55 and 94 (at the onset of AF or control selection), and were free of prevalent AF. The study group consisted of 777 men with 460 deaths, and 810 women with 477 deaths during follow-up. The age- and RF-adjusted (adjusting for age, hypertension, smoking, diabetes, ECG left ventricular hypertrophy, myocardial infarction, congestive heart failure, and valvular heart disease) hazard ratio (HR) of AF for death are given below.

	Men		Women	
	HR	95% CI	HR	95% CI
Age-adjusted	3.7***	2.9–4.8	4.2***	3.3–5.4
RF-adjusted	3.1***	2.3–4.1	2.8***	2.1–3.7

***p ≤ 0.0001

Even when subjects dying within the first 30 days of AF were excluded from analysis, AF carried a significantly elevated risk for death (RF-adjusted HR 2.4*** in both sexes).

Conclusion: AF has a negative impact on survival, independent of the pre-existing cardiovascular conditions with which it is often associated. The increased mortality of AF underscores the importance of its prevention.

2:45

754-4 Proven Efficacy of Repeated Dose Intravenous Ibutilide, a Class III Antiarrhythmic Drug, for Rapid Termination of Chronic Atrial Flutter or Fibrillation: Results of a Multicenter Placebo-Controlled Study

Bruce S. Stambler, Arthur S. Portnow, Mark A. Wood, James T. VanderLugt, Linda K. Wakefield, Kim T. Perry, Gail L. Jungbluth, Kenneth A. Ellenbogen, Ibutilide Repeat Dose Study Group. *McGuire VA Medical Center, Medical College of Virginia, The Upjohn Company, Richmond, VA and Kalamazoo, MI*

Currently available antiarrhythmic drugs have limited efficacy for the acute, rapid, pharmacological termination of chronic atrial fibrillation (AF) or flutter (AFL). The objective of this double-blind, placebo-controlled, randomized, multicenter study was to determine the efficacy and safety of repeated doses of intravenous ibutilide in terminating AF and AFL.

Methods: Two hundred forty-two evaluable patients (mean age 66.9 years, 80% male, 75% with heart disease) with sustained AF (n = 121) or AFL (n = 121) (duration 3 hrs to 45 days) were randomized into 3 groups to receive two 10-minute infusions separated by 10 minutes: placebo/placebo (n = 81); 1 mg/0.5 mg ibutilide (n = 79); 1 mg/1 mg ibutilide (n = 82). The infusions were discontinued at the time of arrhythmia termination.

Results: The cumulative conversion efficacy after the two ibutilide infusions was greater (both p < 0.0001) than after placebo (47% vs. 2%). There was no significant difference in success rates between the two ibutilide doses (44% vs. 49%). Conversion efficacy of ibutilide was greater for AFL than AF (63% vs. 31%). In patients who failed to convert with the first infusion, the success rates after a second infusion were 2%, 27%, and 36% for placebo, 0.5 mg ibutilide and 1 mg ibutilide. The mean time to arrhythmia termination was 27 minutes after the start of the first infusion. Predictors of arrhythmia termination were arrhythmia duration and left atrial size (in AF group only). Ejection fraction, valvular disease, concomitant medications, plasma ibutilide concentration and QTc interval did not predict arrhythmia termination. Of 180 total ibutilide patients, 3 (1.7%) developed sustained polymorphic ventricular tachycardia (PVT) requiring cardioversion and 12 (6.7%)